

*epi*TRENDS
























































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Avian and Human Influenza

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Influenza A viruses can affect a wide range of animals. The strains infecting humans often arise from viruses of avian or swine origin. An influenza pandemic could develop if a new influenza strain jumped from another species to humans with subsequent efficient person-to-person transmission, or if a novel virus were generated via reassortment of the viral genome in a human simultaneously infected with seasonal influenza and avian influenza, creating a new virus that may have potential to move readily between human hosts.

Avian Influenza

Hemagglutinin					Neuraminidase				
Subtype	People	Poultry	Pigs	Bats / Other	Subtype	People	Poultry	Pigs	Bats / Other
H1					N1				
H2					N2				
H3				Other Animals	N3				
H4				Other Animals	N4				
H5					N5				
H6					N6				
H7				Other Animals	N7				Other Animals
H8					N8				Other Animals
H9					N9				
H10					N10				
H11					N11				
H12									
H13									
H14									
H15									
H16									
H17									
H18									

<http://www.cdc.gov/flu/about/viruses/transmission.htm>

Influenza A viruses are named by their hemagglutinin (H) and neuraminidase (N) surface proteins. To date there are 18 different hemagglutinins and 11 different neuraminidases identified. Influenza viruses also have six other genes with 11 corresponding proteins. As a result, two strains might both be designated

A(H5N1) with similar surface proteins but differ greatly in their other characteristics.

Influenza A occurs in more than 100 different wild bird species, primarily waterfowl. Virus is shed from the birds' respiratory and intestinal tracts. Infected waterfowl are often asymptomatic but may encounter and infect domestic poultry such as chickens, turkeys, ducks, and geese.

02.15



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Avian influenza strains are categorized as low or high pathogenic based on their ability to cause disease in chickens under experimental conditions; high pathogenic strains kill at least 6 out of 8 chickens in a challenge trial. In addition, modern molecular techniques are now used to look for genetic markers of pathogenicity. High pathogenic strains can affect multiple organs, increasing the risk of transmission through feces or fecally contaminated surfaces. Low pathogenic strains cause no or minor symptoms such as ruffled feathers and decreased egg production. A low-pathogenic strain can evolve into a high pathogenic strain within a few weeks or persist unchanged in a population for years.

Starting in 2003, a high pathogenic A(H5N1) virus strain became widespread in domestic flocks, disseminating from Asia to Europe and Africa. Millions of birds have been affected in those regions. In 2013, China identified poultry infected with a new and different strain of H7N9.

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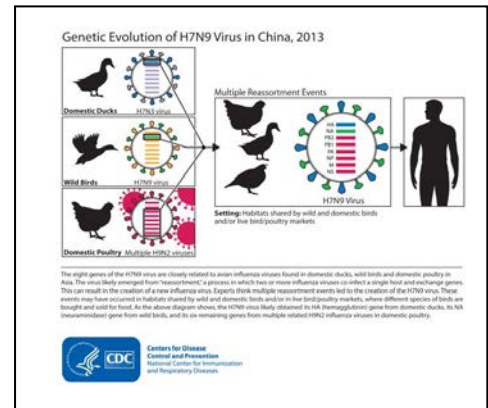
Prior to 2014, a small number of influenza outbreaks had been identified in North American poultry. Fraser Valley in British Columbia had an outbreak of H7N3 in 2004 and outbreaks of A(H5N2) influenza on poultry farms in both 2009 and 2014. Texas had A(H5N2) in chickens in 2004. Poultry outbreaks of A(H5N8) occurred during 2014 in South Korea, Japan, China, Germany, Netherlands, and Italy. During the last few months A(H5N8) was identified in captive falcons and A(H5N2) and A(H5N1) were identified in wild ducks from Whatcom County. In Benton and Franklin counties, A(H5N2) was identified in backyard poultry flocks. In Clallam County, A(H5N2) was identified in a backyard poultry flock. In Okanogan, A(H5N2) was identified in a game bird farm as well as a backyard poultry flock. California identified A(H5N8) in turkeys this year. CDC has recently released human health management guidance for people exposed to H5N1, H5N2 and H5N8 in the United States (see Resources).



In Washington State, flocks with confirmed avian influenza have been depopulated by Washington State Department of Agriculture and partners. Humans with known exposure to the infected birds have been contacted by local public health, and provided with human health guidance including recommendations for antiviral prophylaxis and symptom monitoring.

Avian Influenza Outbreaks and Human Infections

Avian influenza viruses in domesticated birds have the potential for transmission to humans, causing novel influenza infections. Risk for human infection appears to be via direct or indirect exposure to infected live or dead poultry or contaminated environments, such as live bird markets or on farms. Self-inoculation of mucous membranes (eyes, nose, mouth) may result in exposure. At present, person-to-person transmission of these avian strains has not been sustained. Ongoing monitoring of human infections is conducted because a changed virus could present a global health threat. Of note, the global 2009 A(H1N1) novel influenza virus outbreak included avian elements from wild birds, ducks, and chickens.



There have been almost 700 hundred A(H5N1) human cases and over 400 deaths since 2003 associated with the poultry outbreak in Asia. China also reported over 100 human infections with the new H7N9 virus. The case fatality rate for A(H5N1) and A(H7N9) infections in humans is higher than that for seasonal influenza. Underlying medical conditions present a particular risk for A(H7N9) influenza. Cases of conjunctivitis in workers occurred during the 2004 outbreak of A(H7N3) in western Canada. A 2014 fatal case of A(H5N1) and two 2015 cases of A(H7N9) diagnosed in Canada were associated with travel to Asia.



Avian influenza A viruses cause variable illnesses in humans including conjunctivitis only, influenza-like illness, or severe respiratory illness with multi-organ disease. Clinical presentation alone is not sufficient to diagnose a novel influenza infection because symptoms overlap those of seasonal influenza and other respiratory pathogens. Diagnosis depends on obtaining a travel or bird exposure history and requesting appropriate testing at a reference laboratory, either by a molecular method or viral culture; paired serology may also be appropriate for specific high risk exposures. Rapid influenza tests are not reliable in such situations.

Treatment with a neuraminidase inhibitor (oseltamivir, zanamivir, or peramivir) should be started as soon as possible when any influenza infection is suspected in a person at risk for severe disease or when novel influenza infection is suspected in any person based on exposures. Consultation may be needed for dosing and treatment duration with a case of novel influenza.

Public health measures

Surveillance of animal and human influenza infections is conducted at international, national, state, and local levels. Departments of agriculture are involved with monitoring, testing, flock management, and disinfection. There is also surveillance for influenza in wild birds. In Washington, surveillance for novel influenza in humans is conducted through reporting of suspected novel influenza based on laboratory identification of a strain that cannot be subtyped or on epidemiologic risk of exposure to a novel strain.

Public health measures addressing novel influenza include:

- Encourage annual influenza vaccination for persons with frequent bird contact to reduce the risk of co-infection with human and avian strains.
- Follow CDC and WHO guidance for exposed persons including post-exposure antiviral treatment and monitoring.
- Recommend health care personnel caring for patients with suspected or confirmed novel influenza use recommended personal protective equipment and follow recommended infection control measures (standard, droplet, contact, and airborne precautions).
- Protect domestic birds from avian influenza.
- Use precautions (including gloves and hand washing) when handling poultry or wild birds.
- Cook all poultry and game birds thoroughly.
- Promote respiratory hygiene.

How Can You Protect Your Birds?



Six simple steps can help keep your birds—and those of your neighbors—free of disease.

1. **Keep your distance.** Limit access to your property and your birds. If visitors have birds of their own, do not let them near your birds. Your birds should not have contact with wild birds and migratory waterfowl because they can carry germs and diseases.
2. **Keep it clean.** Wash your hands thoroughly before and after working with your birds. Wear clean clothes and wash your shoes with disinfectant. Clean and disinfect equipment, including cages and tools, that comes in contact with your birds or their droppings. Remove manure before disinfecting equipment. Properly dispose of dead birds.
3. **Don't haul disease home.** Buy birds from reputable sources so you know you're getting healthy birds. Keep new birds separate from the rest of your flock for at least 30 days. If your birds have been to a fair or exhibition, keep them separated from your flock for 2 weeks after the event.
4. **Don't borrow disease from your neighbors.** Do not share garden equipment or poultry supplies with your neighbors or other bird owners. If you do bring these home, clean and disinfect them before they reach your property.
5. **Know the warning signs.** Early detectors can help prevent the spread of disease. While it may be hard to tell if your bird has AI, when you check your birds frequently, you may be able to tell if something is wrong.
6. **Report sick birds.** Don't wait. If your birds are sick or dying, call your local cooperative extension office, your veterinarian, or the State Veterinarian or State animal/poultry diagnostic laboratory. Or call USDA toll free at 1-866-636-2593, and we'll put you in touch with a local contact who can help you.

http://www.aphis.usda.gov/publications/animal_health/2011/ProtectYourBirdFromAI_Eng.pdf

Resources

DOH influenza testing: <http://www.doh.wa.gov/Portals/1/Documents/5100/speccollecttrans.pdf>

Influenza in animals: <http://www.cdc.gov/flu/about/viruses/transmission.htm>

U.S. Avian outbreaks 2014-2015: <http://www.cdc.gov/mmwr/pdf/wk/mm64e0203a2.pdf>

Management of suspected novel influenza: <http://www.cdc.gov/flu/avianflu/severe-potential.htm>.

Overview of avian influenza: <http://www.cdc.gov/flu/avianflu/>

WHO A(H5N1) surveillance:

http://www.who.int/influenza/human_animal_interface/H5N1_cumulative_table_archives/en/

CDC follow-up of contacts: <http://www.cdc.gov/flu/avianflu/guidance-followup.htm>